

Claims

- [c1] 1. A method for reducing the probability of formation of deep vein thrombosis during periods of reduced cabin atmospheric pressure experienced during normal aircraft flight, said method comprising:
decreasing deep vein thrombosis occurrence during aircraft flight by increasing atmospheric oxygen concentration within an occupant cabin.
- [c2] 2. A method for increasing atmospheric oxygen concentration within an occupant cabin of an aircraft, said method comprising:
separating oxygen from ambient air onboard an aircraft thereby establishing a high-concentration oxygen supply;
dispensing high-concentration oxygen from the supply to an occupant cabin of the aircraft thereby increasing the level of oxygen concentration within the cabin to a level greater than the naturally occurring partial pressure of oxygen at the experienced internal cabin pressure.
- [c3] 3. A method for increasing nitrogen concentration within regions of an aircraft, said method comprising:
separating nitrogen from ambient air onboard an aircraft

thereby establishing a high-concentration nitrogen supply;
dispensing high-concentration nitrogen from the supply to fire-susceptible, non-habitable region of the aircraft thereby decreasing the capability for the atmosphere therein to support combustion.

- [c4] 4. A method for monitoring partial pressure of oxygen in an occupant cabin of the aircraft as well as in the fire-susceptible, non-habitable areas of the aircraft , said method comprising:
continuously detecting absolute pressure and oxygen percentage in areas of the aircraft, computing partial pressure of oxygen in those areas and reporting the resulting partial pressure of oxygen values to a central control system.
- [c5] 5. A method for controlling the degree of oxygen/nitrogen shift of incoming air in response to the partial pressure of oxygen in areas of the aircraft, said method comprising:
continuously reconfiguring the system pressures and flows in response to reported partial pressure of oxygen values, flight parameters, aircraft configuration and smoke/fire warning status.
- [c6] 6. A method for re-mixing the atmosphere in the occu-

plied and unoccupied areas of the aircraft to quickly re-establish the natural, at altitude partial pressure of oxygen, said method comprising:

introduce the nitrogen rich air stored in the non-habitable areas of the aircraft into the occupied, oxygen enriched areas.

[c7] 7. A method for lowering the partial pressure of oxygen below the natural, at altitude level in response to fire in the habitable areas, said method comprising:

introduce the nitrogen rich air stored in the non-habitable areas of the aircraft into the occupied, oxygen enriched areas, in conjunction with directing the oxygen rich stream from the air separators overboard while directing the nitrogen rich stream into the habitable areas.

[c8] 8. A method for adjusting nitrogen and oxygen concentrations within regions of an aircraft, said method comprising:

separating nitrogen from ambient air onboard an aircraft thereby establishing a high-concentration nitrogen supply; and

dispensing high-concentration nitrogen from the supply to a fire-susceptible, non-habitable region of the aircraft where the high-concentration nitrogen is reservoired thereby decreasing the capability for the atmosphere therein to support combustion.

[c9] 9. The method as recited in claim 8, said method further comprising:

separating oxygen from ambient air onboard an aircraft thereby establishing a high-concentration oxygen supply; and

dispensing high-concentration oxygen from the supply to an occupant cabin of the aircraft thereby increasing the level of oxygen concentration within the cabin to a level greater than the naturally occurring partial pressure of oxygen at the experienced internal cabin pressure.

[c10] 10. The method as recited in claim 9, said method further comprising:

determining that reduced oxygen concentration is required in the occupant cabin and responsively initiating a remixing of the reservoired high-concentration nitrogen thereby diluting the oxygen concentration in the occupant cabin.